

12.—The gekkonid genus *Nephrurus* in Western Australia, including a new species and three new subspecies

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The eight forms of the genus *Nephrurus* known to inhabit Western Australia are described, including a new species (*vertebralis*) and three new subspecies (*wheeleri cinctus*, *levis occidentalis*, and *levis pilbarensis*). Tables of measurements illustrate a tendency for certain characters to vary clinally from north to south; these trends operate in the genus as a whole and regardless of the boundaries of species, which are still largely allopatric.

Introduction

The various species of *Nephrurus* mainly inhabit the arid interior of the continent and so were missed by the early collectors, whose activities were generally restricted to coastal areas. Indeed, it is only recently that sufficient material has accumulated in the Western Australian Museum for even a preliminary survey of the genus within this state. Most of the specimens received up to about five years ago were donated by pastoralists and miners. Since then material has largely come from naturalists, who are increasingly exploring the remoter parts of the State. We are especially indebted to Messrs W. H. Butler and M. de Graaf for collections from respectively the southern and northern fringes of the Great Victoria Desert.

In the following descriptions the term "tubercle" includes the rosette of small scales that usually surrounds each large conical scale (elsewhere the latter alone is often referred to as a tubercle). There are no diagnoses apart from descriptions; important characters, however, have been printed in bold type. Unless stated to the contrary, all material examined is lodged in the Western Australian Museum, and all localities are in this State.

Genus *Nephrurus* Günther

Type (by monotypy): *N. asper* Günther, 1876, J. Mus. Godeffroy 5: 46.

Description: Terrestrial geckoes with large subtriangular bony head strongly marked off from the trunk by a slender neck. Limbs moderately long and slender. Digits short, straight, undilated and bearing claws; **the fifth toe (but not the fifth finger) being widely separated from the fourth.** Tail moderately to very short, more or less depressed, annulated (indistinctly in flat-tailed forms), **terminating in a subglobular knob**, and narrowly articulate with swollen post-pygum (it is only at this constriction that the tail breaks). Upper eyelid large and thick. Eye large, the pupil vertical. Nostril opens upwards and backwards. External ear orifice large and narrow vertical. Only enlarged

head scales are rostral, mental, and labials (15-22 upper, 13-21 lower). Head, body and appendages covered with small juxtaposed or granular scales, intermixed with larger ones which may be tuberculate. Supradigital scales become increasingly keeled and imbricate towards end of toe. Subdigital scales granular.

Distribution: Endemic to continental Australia: arid and semi-arid regions from the mid-west and north-west coast east through the interior to central Queensland. In Western Australia there are five species, which collectively range from North Kimberley south to the north-eastern Wheat Belt and the Nullarbor Plain.

Key To Species of *Nephrurus*

- 1.a. Scattered tubercles on flanks 2
- b. Flanks smooth *laevissimus*
- 2.a. Flank tubercles contain a single conical scale; fewer than 8 inter-orbital scales 3
- b. Flank tubercles contain several conical scales; more than 8 inter-orbital scales *asper*
- 3.a. 4 or 5 broad dark bands across body and tail *wheeleri*
- b. No broad transverse bands 4
- 4.a. Prominent pale vertebral line; tail narrow and slightly depressed *vertebralis*
- b. No vertebral line; tail broad and flat *levis*

Nephrurus asper Günther

Nephrurus asper Günther, 1876, J. Mus. Godeffroy 5: 46. Peak Downs, Queensland.

Material examined: R13646 (Kalumburu), R12613 (Calwynyardah), R1340 (Leopold Downs).

Form: Head very large and twice (or more) as wide as neck. Tail extremely short, not so depressed as is usual in the genus, and terminating in a relatively large knob. There are fewer (8 or 9) caudal annuli than in other species (15-21). Snout-vent length of largest specimen (R1340) is 107mm.

Scalation: Head covered with round to hexagonal, flat or slightly raised, juxtaposed scales, largest round the orbit, smallest in the loreal concavity. 9-11 inter-orbital scales, i.e. considerably more than in other species (3-7). Head tubercles (much smaller than those on back etc.) consist of a relatively large and high scale surrounded by a ring of smaller scales; they first appear in the frontal region and become increasingly large and frequent through the occiput to the nape. Three longitudinal lines of tubercles on upper eyelid. Throat may or may not be densely covered with small flattish tubercles, consisting of rosettes of scales very little larger and higher than ordinary scales.

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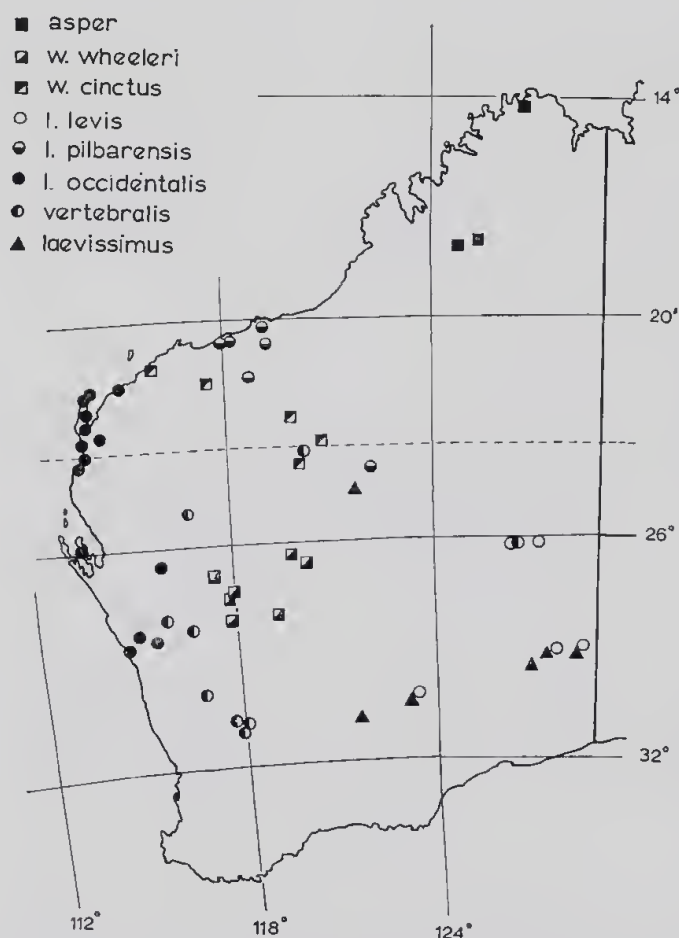


Fig. 1.—Map of Western Australia showing location of specimens of *Nephurus*.

Back, flanks and upper surface of limbs and tail covered with small flat juxtaposed scales through which tubercles are thickly scattered. Tubercles are smallest on the arms and anteriorly on the mid-dorsum where they usually consist of a single conical scale surrounded by a ring of smaller and lower scales which are clearly larger than the ordinary scales between tubercles. On the neck, flanks, thighs and tail the tubercles are larger and comprise a cluster of acutely conical scales within a ring of smaller scales.

Ventral scales uniformly small and juxtaposed. Scales under tail similar in size but higher and tending to become conical.

Coloration: In juveniles the dorsal and lateral ground colour is pinkish grey. A fine blackish brown reticulation on the head and sides of jaw. There are 13 fine blackish bands across the body and tail, the first and widest on the nape. Between these black bands are lines of white spots, each co-existent with a tubercle. Limbs darker, narrowly and indistinctly banded with white, the bands becoming more distinct on the digits. With increasing size many details of coloration disappear.

Distribution: Confined in Western Australia to the Kimberley Division. East and south-east the species extends through the Northern Territory to Queensland.

Comments: Specimens from Kimberley have a much shorter tail (16% of the head plus body) than those from Queensland (24% in both the

type and the MCZ specimen measured by Loveridge, in 1934). The central Australian specimen measured by Lucas and Frost (1896) is exactly intermediate (20%).

Nephurus wheeleri wheeleri Loveridge

Nephurus wheeleri Loveridge, 1932, Proc. New England Zool. Club 13: 31. Yandil, Western Australia.

Material examined: R4719 (Wiluna); R4459 (a paratype), R2224, R2225, (Yandil); R19092 (Wilgie Mia); R733, R1168, R1396 (Cue); R16528 (Day Dawn); R6417 ("Narudie via Mt. Magnet"); R8942 (Sandstone).

Form: Head longer and narrower than in *asper*. Tail much longer than in *asper*, the proximal two-thirds being wide, depressed, and sharply marked off from the distal third. Terminal knob relatively small. Snout-vent length of largest specimen (R4719) is 90 mm.

Scalation: Head covered with flat, hexagonal, juxtaposed scales, smallest in the loreal concavity. These are replaced by larger, conical scales on and immediately below the canthus rostralis, round the orbit, and scattered over the occiput. Throat covered with minute granules, densely interspersed with conical scales much smaller than those on top of head. Subconical scales on sides of lower jaw are only slightly smaller than labials; the transition to the minute gular scales being very rapid on the ventro-lateral angle of the jaw.

Nape, back, flanks and upper surface of tail densely covered with tubercles, each consisting of a large conical scale surrounded by a ring of raised striate scales which are clearly larger than the small granules between tubercles. The conical scales on the upper surface of limbs are surrounded by scales that are not appreciably larger than the inter-tubercular scales.

Coloration: Dorsal ground colour vinaceous pink in life (Glauert 1961). **Four dark-brown bands across body and tail;** the first and broadest across the neck and upper back; the others respectively across the lower back, base of tail, and narrow distal portion of tail. A brown reticulation on snout and side of head.

Distribution: Murchison Goldfield, Western Australia.

Nephurus wheeleri cinctus subsp. nov.

Holotype: R4284 (in Western Australian Museum), collected at Tambrey, Western Australia, (21° 38' S, 117° 37' E), by Mrs O. Cusack in 1931.

Paratypes: R13114, R14600 (Mardie); R2714, R2715, R2716, R4285, R5271, R8099 (Tambrey); R13840 (Roy Hill); R1009 (Jigalong); R12275, R12276, R12283, R12284, R12285, R12286, (Mundiwindi); R14831, R14832 (14 miles SW of Mundiwindi).

Form: As in nominate race, except for slightly smaller head and considerably smaller orbit. Snout-vent length of largest specimen (R13840) is 100.5 mm.

Scalation: Differs from nominate race in having larger tubercles, especially on the throat where they are also more numerous. The conical scales on legs are surrounded by scales that are distinctly larger than their neighbours.



Fig. 2.—Left (top to bottom): *Nephurus w. wheeleri*, *N. w. cinctus*, and *N. asper*. Right (top to bottom): *N. vertebralis*, *N. levis* and *N. laevis*.

Coloration: As in nominate race except that there are 5 (not 4) dark bands across body and tail. The additional band is due to the splitting of the first broad band (in *w. wheeleri*) into two equal bands separated by a pale space of similar width.

Distribution: Western Australia, principally in the valley of the Fortescue River, from Mardie in the north-west to Jigalong in the south-east, with a slight southward extension to Mundiwindi.

Nephurus levis levis De Vis

Nephurus levis De Vis, 1886, Proc. Linn. Soc. N.S.W. (2) 1: 163. Queensland.

N. platyrus Boulenger, 1886, Ann. Mag. Nat. Hist. (5) 18:91. Adelaide, South Australia.

Material examined: R14836 (Boorabie, i.e. 150 miles NE of Loongana); R14837, R14838 (Iltoon, i.e. near Lake Eil); R14839 (Queen Victoria Spring); R17111 (Warburton Range Mission); R14840 (38 miles E of Warburton Range Mission); A. Kluge no. 1344 (Hammond Downs, i.e. near Windorah, Queensland).

Form: Generally similar to that of *N. wheeleri*. Snout-vent length of largest specimen (R14836) is 88 mm.

Scalation: Head covered with rounded to hexagonal, juxtaposed, striate scales, largest and highest on the occiput, above the temples and round the orbit; smallest below and behind nostril. Throat covered with uniformly small

granules. Rostral about as wide and deep as mental. First upper labial usually higher than second.

Neck, back and upper surface of limbs covered with striate, juxtaposed granules, smaller than those on head, and uniformly intermixed with tubercles, each of which consists of a striate conical scale surrounded by a ring of smaller scales, not differing in size and shape from those between tubercles. White tubercles tend to be higher than dark ones.

Caudal tubercles consist of a mucronate conical scale (much larger than those on dorsum and usually pointed backwards) surrounded by a ring of scales somewhat larger than those between tubercles. Caudal tubercles are arranged in 8-12 irregularly longitudinal rows.

Entire ventral surface of body and limbs covered with small, juxtaposed non-striate scales.

Coloration: Dorsal ground colour more or less dark purplish brown (becoming paler with age). The pattern consists of various white spots, blotches and lines. The most prominent and consistent features are three white lines in the region of the neck and shoulder; the first runs straight across the occiput; the second is across the neck and slightly curved backwards; the third is V-shaped and originates on the shoulders above the insertion of the arm and extends diagonally back to the mid-line. On the back there are several more white lines; these are

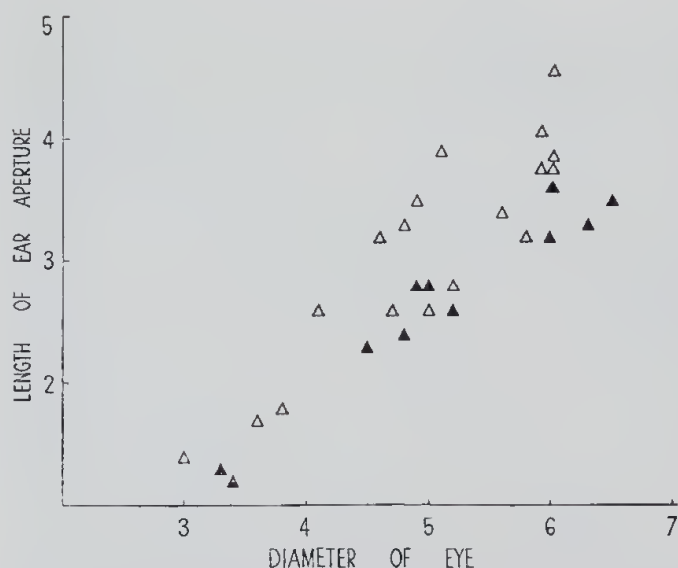


Fig. 3.—Graph showing relation between length of ear aperture and horizontal diameter of eye in *N. wheeleri wheeleri* (solid triangles) and *N. wheeleri cinctus* (hollow triangles).

considerably less distinct than the three described above and are actually irregularly transverse lines of white dots, each coincident with a tubercle.

Distribution: Eastern interior of Western Australia, north to the Warburton Range and west to Queen Victoria Spring. Eastwards it extends through central Australia to western Queensland.

Comment: Figured in colour by Lucas and Frost (1896).

Nephurus levis occidentalis subsp. nov.

Holotype: R13918 (in Western Australian Museum), collected at Narryer, Western Australia, (26°34' S, 115°56' E), by N. Armstrong in 1961.

Paratypes: R8708 (Onslow); R5323 (Marilla); A. Kluge no. 371 (7 miles SSW of Learmonth); R14027 (North-West Cape); R13113 (Yardie Creek); R16864 (8 miles SW of Bullara); R9007 (Cardabia); R8210 (Warroora); R9165 (Gnaraloo); R19643 (Denham); R13917 (Narryer); R61, R7249, R10296 (Mullewa); R1904 (Yuna); R2255 (Waggrakine); R5353 (Geraldton).

Form: As in nominate race, except for considerably longer, wider and more depressed tail. Snout-vent length of largest specimen (R61) is 91 mm.

Scalation: Differs from nominate *levis* in that most specimens have the rostral narrower than the mental, the first upper labial lower than the second, and the mid-posterior edge of mental with a lip-like projection. Caudal tubercles are arranged in 10-12 highly irregular series.

Coloration: Differs from nominate *levis* mainly in being a little paler.

Distribution: Restricted to Western Australia from Onslow south along the coast to Geraldton and inland to Marilla, Narryer and Mullewa.

Nephurus levis pilbarensis subsp. nov.

Holotype: R14835 (in Western Australian Museum), collected 12 miles east of Mundabullangana, Western Australia, (20°31' S, 118°13' E), by G. M. Storr and B. T. Clay on February 23, 1962.

Paratypes: R14833, R14834 (Mundabullangana); R1640 (De Grey); R8520 (Shaw River Tank); R11330 (Shaw River); R13061, R13062, R13325 (Woodstock); R3890 (Well 15, Canning Stock Route).

Form: As in *l. occidentalis*, i.e. tail is larger and flatter than in *l. levis*.

Scalation: As in other forms of *levis*, except that in this race alone larger granules are scattered among the smaller granules of the throat. From *occidentalis* to which it is most similar, it also differs in that nearly all specimens have the rostral about as wide as the mental, and the first upper labial as high as the second (in this respect it agrees with nominate *levis*). It shares with *occidentalis* a tendency to have the mental "lipped".

Coloration: The dorsal ground colour is paler than in other races, viz. pale purplish grey; hence the white occipito-scapular lines, characteristic of other races, are not so prominent here as the dark purplish brown lines that parallel them. In addition to these there is an irregular network of dark blotches and lines on the back.

Distribution: Restricted to the Pilbara region of Western Australia from the Yule and De Grey River drainages south-east to the vicinity of Lake Disappointment.

Nephurus vertebralis sp. nov.

Holotype: R5231 (in Western Australian Museum), collected at Jibberding, Western Australia, (29°58' S, 116°51' E), by E. W. Pendavey in 1935.

Paratypes: A. Kluge no. 892 (10 miles N of Mundiwindi); R1899 (Landor); R13112 (Yuin); R5300 (Wadgingarra); R2490 (Jibberding);

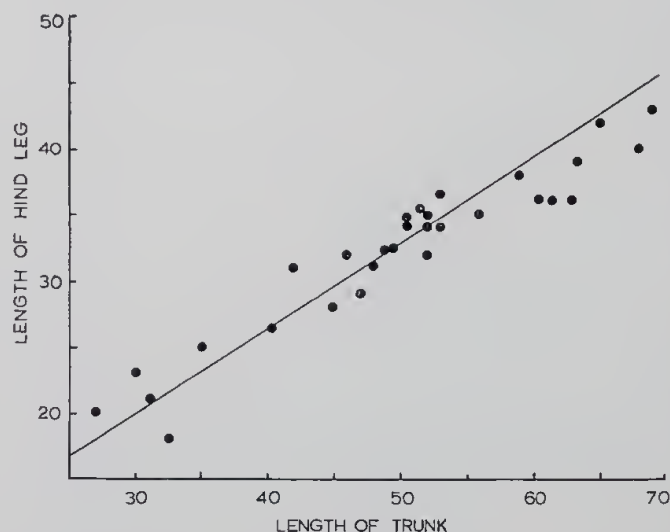


Fig. 4.—Graph showing changing relation between length of hind-leg and length of trunk (mm) in *Nephurus levis*. The straight line has a slope of 0.67, i.e. the mean ratio hind-leg to trunk in animals with a trunk length of less than 55 mm.

R1392 (Bencubbin); R6191 (Mukinbudin); R13415 (Kununoppin); R17110 (Warburton Range Mission).

Form: As in *levis*, except for narrower and less depressed tail and longer ear-slit. Snout-vent length of largest specimen (R1392) is 92 mm.

Scalation: As in *levis*, except that the caudal tubercles are arranged in more regular but fewer longitudinal rows, and tend to be surrounded by higher and more acute scales.

Coloration: Ground colour of head, neck, shoulders, sacrum and tail, dark purplish brown; of back and upper surface of limbs, pale purplish brown. Across the occiput, neck and shoulders are three pale lines as in *levis*, but differing slightly as follows: the first is bowed back slightly (not straight) and laterally continues down and forward over temples to orbit. The second and third, though generally arched backwards, swing forward a little as they approach the mid-line, so that the third line could almost be described as W-shaped. The most prominent feature is a pale vertebral line extending from the occipital transverse line almost to end of tail; such a line is at best only faintly discernible in *levis*.

Distribution: Restricted to Western Australia. Mainly distributed in a long narrow strip of country from Mundiwindi, south through the Upper Gascoyne and Yalgoo districts to the north-eastern Wheat Belt. Also occurs far to the east at Warburton Range.

Nephrurus laevis Mertens

Nephrurus laevis Mertens, 1958, Senck. Biol. 39: 51. Dunes about 2 km north-west of Ayers Rock, Northern Territory.

Material examined: R8416, R8417 (White Lake, i.e. 170 miles NE of Wiluna); R12230 (19 miles W of Randalls); R14844, R14845 (Queen Victoria Spring); R12223, R12226 (10 miles S of Queen Victoria Spring); R14483 (Iltoon, i.e. near Lake Ell); R14842 (Smith's Station, i.e. 90 miles N of Loongana); R14841 (Boorabbie, i.e. 150 miles NE of Loongana); R2269 (Ooldea, South Australia).

Form: Similar to *levis*, *vertebralis*, and *wheeleri*, except for somewhat shorter and considerably narrower tail, and for longer and relatively narrower head. Snout-vent length of largest specimen (R12223) is 77mm.

Scalation: Head covered with rounded to hexagonal scales largest and highest in the

parietal region, smallest on the temples and behind nostrils. Posteriorly from the occiput the granules rapidly decrease in size. The neck and greater part of back and flanks are very smooth, there being scarcely any indication of scales or granules, except in the vicinity of the mid-line where there are scattered small conical scales. These become larger and denser on the sacrum and the thighs. On the upper surface of the tail the conical scales are considerably larger and spinier, and are arranged in six fairly regular longitudinal series. Each conical scale is surrounded by a ring of granules not or only slightly larger than the intertubercular granules. The entire under surface is covered with granules, smallest on the throat.

The dorsal skin is so thin in this species that the vertebrae and ribs protrude through it.

Coloration: Dorsal ground colour very pale pinkish grey. There are three blackish brown transverse lines in the region of the neck: the first, beginning immediately behind the eye, goes straight back to level of ear, then turns abruptly to run across extreme back of head; the second runs across the neck and is slightly bowed towards the tail; the third begins above or behind the insertion of the arm and is more strongly bowed towards tail; some or all of these lines are broken in many specimens. There is a dark brown spot behind the nostril and three more on the mid-line of the head, respectively opposite the anterior and posterior ends of the orbit and in the middle of the occiput; the last two may be absent or laterally expanded to form short transverse lines arching backwards. There is a blackish brown longitudinal line on each side of the sacrum and one or more spots towards the mid-line in the lumbo-sacral region. The caudal tubercles, a spot below the orbit, and the entire under-surface is white.

Distribution: Eastern interior of Western Australia, from latitude 24 south to the Nullarbor Plain. Eastwards it extends into south-western Northern Territory and north-western South Australia.

Comments: This distinctive species was long confused with *N. levis*. A specimen collected at Immarna, South Australia, in 1920 was described and figured by Kinghorn (1924) as a new colour variety of *levis*. The species has been represented in the Western Australian Museum since 1942 when K. G. Buller collected two specimens on the Canning Stock Route.

TABLE I

Mean length of head etc. (with standard deviation in brackets) expressed as a percentage of length of trunk. The figure in brackets after number in sample is the number of specimens complete with tail.

	Number in Sample	Head		Tail		Hind Leg	Diameter of Eye	Ear Aperture
		Length	Width	Length	Width			
<i>asper</i>	3 (3)	39.0 (5.7)	41.0 (4.1)	22.0 (0.8)	9.3 (0.5)	62.3 (3.8)	9.0 (2.1)	6.7 (0.3)
<i>w. vinctus</i>	19 (9)	38.4 (2.6)	36.7 (2.6)	57.0 (3.4)	24.1 (3.1)	63.4 (3.6)	9.2 (1.3)	5.6 (0.7)
<i>w. wheeleri</i>	11 (6)	41.2 (3.1)	39.0 (3.2)	61.0 (1.8)	22.0 (3.0)	65.7 (3.4)	11.0 (1.3)	5.5 (0.8)
<i>l. pilbarensis</i>	10 (8)	38.2 (2.9)	37.0 (2.1)	61.6 (4.6)	27.0 (5.1)	63.8 (3.3)	10.3 (1.2)	4.8 (0.7)
<i>l. occidentalis</i>	17 (14)	40.7 (3.5)	38.2 (2.2)	61.0 (4.5)	26.5 (3.9)	66.4 (5.7)	11.4 (1.3)	4.6 (0.7)
<i>l. levis</i>	7 (6)	38.8 (1.6)	36.0 (0.9)	52.6 (4.9)	21.2 (1.5)	63.7 (3.0)	10.7 (1.4)	4.8 (0.6)
<i>vertebralis</i>	10 (9)	39.5 (2.9)	34.6 (2.8)	53.1 (4.5)	16.2 (2.5)	66.6 (4.4)	11.2 (1.3)	5.3 (0.6)
<i>laevis</i>	11 (10)	45.1 (2.4)	38.2 (1.4)	49.1 (2.6)	13.1 (2.2)	67.8 (3.3)	12.5 (0.9)	5.3 (0.8)

Measurements

The following measurements were made on all specimens: total length, i.e. head plus trunk (including neck) plus tail (measured from the vent, not the post-pygial constriction as was apparently done by De Vis when measuring the type of *levis*) hind leg, and width of head and tail (all to the nearest 0.5 mm); and the length of ear aperture and the horizontal diameter of visible part of eye (both to the nearest 0.1 mm). These data were expressed as ratios; means and standard deviations for each taxon are set out in Tables I and II.

The eight taxa of *Nephrurus* inhabiting Western Australia are listed in the tables in a generally north-south sequence, revealing geographical trends in the ratios which transcend species limits. The ratios, ear aperture to trunk and width of head to its length, decrease as one goes south; whereas diameter of eye and length of hind leg increase. Clinal variation is especially marked in the ratio, length of ear aperture to diameter of eye; this ratio yields a good separation of the northern and southern races of *wheeleri*, as illustrated in Figure 2.

Ideally ratios should remain constant throughout life, a condition that is not always fulfilled in the present genus, where the growth of appendages in adults tends to slow down with respect to the trunk. For example, the ratio hind leg to trunk in *levis* decreases slightly after a trunk length of 55 mm is attained (see Figure 3). The proportions within an appendage, however, seem to be unaffected by age, e.g. width to length of head and tail, and length of ear aperture to diameter of eye.

TABLE II

Mean ratio: width to length of head and tail, and length of ear aperture to horizontal diameter of eye (with standard deviation in brackets).

	Width to Length of Head	Width to Length of Tail	Ear Aperture to Eye
<i>asper</i> ..	1.05	0.42	0.75
<i>n. cinctus</i> ..	0.96 (0.06)	0.43 (0.06)	0.62 (0.10)
<i>n. wheeleri</i> ..	0.95 (0.04)	0.36 (0.06)	0.50 (0.07)
<i>l. pilbarensis</i> ..	0.96 (0.04)	0.44 (0.09)	0.46 (0.09)
<i>l. occidentalis</i> ..	0.93 (0.05)	0.44 (0.07)	0.41 (0.08)
<i>l. levis</i> ..	0.92 (0.05)	0.40 (0.03)	0.45 (0.07)
<i>vertebralis</i> ..	0.87 (0.05)	0.31 (0.04)	0.47 (0.06)
<i>laevissimus</i> ..	0.85 (0.04)	0.27 (0.05)	0.42 (0.08)

Discussion

To a large extent the various species of *Nephrurus* are still allopatric, so that over much of the State any one region is occupied by a single form of the genus (see map, Fig. 1). In the Kimberleys *asper* alone has been found; in the De Grey drainage, only *levis pilbarensis*; in the Fortescue, *wheeleri cinctus*; in the East

Murchison, nominate *wheeleri*; and in the Carnarvon Basin, *levis occidentalis*. It is only in the Great Victoria Desert that two forms (viz. *levis levis* and *laevissimus*) are widely sympatric. Elsewhere sympatry has been established at Mundiwindi and Warburton Range, between *vertebralis* and respectively *wheeleri cinctus* and *levis levis*.

The status of *vertebralis* has only been recently settled. Glauert (1961) treated it as a colour variant (his No. 2) of *levis*. At first the present writer too was inclined to regard it as no more than a well-marked race of *levis*. The available specimens at that time all came from the country immediately east and south-east of the range of *levis occidentalis*. As nominate *levis* occurred further to the east, *vertebralis* appeared to be not only allopatric to *occidentalis* and nominate *levis* but also geographically intermediate between them. But only in minor ways was *vertebralis* morphologically intermediate between these forms, and the writer began to doubt the propriety of including it in *levis*. These doubts increased when a specimen of *vertebralis* was collected at Yuin, which is only 30 miles east of the straight line between Mullewa and Narryer, at both of which a *levis occidentalis* had been collected, neither specimen showing any intergradation with *vertebralis*. The problem was finally solved last year, when Mr. Mark de Graaf collected a specimen each of *vertebralis* and *levis* near the Warburton Range Mission. This absolute sympatry necessitated the promotion of *vertebralis* to a full species.

Occidentalis and the closely related *pilbarensis* are themselves very distinct from nominate *levis*, from which they are geographically separated by a large area of heavy, frequently stony, soils which are dominated by mulga and occupied by *wheeleri*. However, *levis* could well have a continuous distribution in the far interior of the state. Although Well 15 on the Canning Stock Route (a *pilbarensis* locality) is 300 miles WNW of Warburton Range (the nearest locality of nominate *levis*), the intervening desert is almost certainly inhabited by some form of the species.

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